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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/092,577	03/08/2002	Manwinder Singh	4320-395	1428

1059 7590 06/30/2004

BERESKIN AND PARR  
SCOTIA PLAZA  
40 KING STREET WEST-SUITE 4000 BOX 401  
TORONTO, ON M5H 3Y2  
CANADA

EXAMINER

MENON, KRISHNAN S

ART UNIT PAPER NUMBER

1723

DATE MAILED: 06/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/092,577

Applicant(s)

SINGH ET AL.

Examiner

Krishnan S Menon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 5-10, 12 and 13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-10, 12 and 13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

Claims 5-10,12 and 13 are pending.

#### *Drawings*

The corrected drawings received on 6/8/04 approved.

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 5-8,10 and 12 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by, or in the alternative, as obvious over Cote et al (US 5,607,593).

Cote et al teaches a water filtering process comprising providing a tank (1, fig 1) containing filtering membranes (3), introducing feed water and keeping the modules submerged (4; col 9 lines 20-25), withdrawing filtered permeate (10) and retentate (28), introducing **a first gas** in the water in the tank in bubbles which rise past the membrane to inhibit membrane fouling (col 4 lines 18-25, col 3 lines 27-32, col 5 lines 53-55, col 4 line 66 – col 5 line 13, and col 7 lines 37-58), collecting a second gas consisting of gases contained in the bubbles (col 4 lines 32-60; col 9 lines 3-5; hood 12 in fig 1). The first gas would consist of second gas and air because first gas is introduced as bubbles by the claim and the second gas is defined as “gases in the bubbles after they have risen past the

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membrane”, and air is bubbled through as indicated in col 5 lines 45-60. Re the implied recycling in the claim, Cote teaches recycling in col 4 lines 45-48 – gases are recovered and reinjected. In claim 6, first gas includes carbon dioxide’ is an inherent property of the system because the CO<sub>2</sub> is part of the “gases contained in the bubbles after they have risen past the membrane”, which is through water, and the oxidation of the biodegradables (col 6 lines 22-28) would inherently produce gases, typically carbon dioxide. When the prior art device (in this instance, a device that bubbles air in water) is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process. In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986). The express, implicit, and inherent disclosures of a prior art reference may be relied upon in the rejection of claims under 35 U.S.C. 102 or 103. “The inherent teaching of a prior art reference, a question of fact, arises both in the context of anticipation and obviousness.” In re Napier, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed. Cir. 1995) (affirmed a 35 U.S.C. 103 rejection based in part on inherent disclosure in one of the references). See also In re Grasselli, 713 F.2d 731, 739, 218 USPQ 769, 775 (Fed. Cir. 1983).

Re claim 7, the second gas is 80% of the mixture implies 80% of the gas streams are recycled. Cote does not specifically teach how much of the gases are recycled in col 4 lines 45-48. However, this would be a result-effective variable, and can be optimized on process economics and contamination levels in the second gases. The same is true for claim 12.

Claim 8: scaling tendencies is an inherent property of the feed water.

Regarding claim 10, Cote teaches adding coagulants to the feed water in the tank (col 1 lines 20-25; col 2 lines 29-35)

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cote (593) in view of Dickerson et al (US 6,221,254 B1) and Cote et al (US 6,245,239 B1).

Cote'593 teaches all the limitations of claim 5. Claim 9 adds further limitations, which are not taught by Cote. Dickerson teaches using recycled CO<sub>2</sub> in a concentration greater than in air (col 6 lines 30-35; abstract; col 5 lines 4-59; claim 1; col 9 lines 33-37). Cote'239 teaches the superficial velocity as between 0.01 – 0.015 for a membrane aeration system. It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Dickerson and Cote'239 in the teaching of Cote'593 to have improved filtration including pH control below 8, coagulation, precipitation, and then floatation of biological contaminants in the water using microfine bubbles of CO<sub>2</sub> gas (see Dickerson col 5 lines 4-60; with use of filters in col 9 lines 55-65), and for maintaining the membrane surface clean as taught by Cote'239. Regarding the pH being

maintained below 8 when the Langlier Scaling index  $>0.5$ , pH being maintained at all times in the reference encompasses this limitation. The scaling index  $>0.5$  is only an inherent property of the wastewater.

Claim 13 recites step for the function of creating the second gas, which is provided by the tightness of a hood over a tank. Cote'593 teaches a hood for collection of second gas – 12, fig 1, but does not teach the specifics of recycling the second gas. Means for vacuum induced recycling flow of second gas is taught by Dickerson – see col 9 lines 32-37 and the figure. It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Dickerson in the teaching of Cote'593 for recycling the second gas pH control, coagulation, etc as taught by Dieckerson.

### ***Response to Arguments***

Applicant's arguments filed 6/8/04 have been fully considered but they are not persuasive.

Argument that the web site is not a citable reference: a web site is a publication accessible to the general population, and is therefore a citable reference. The information in the website cited is not to show that it is the ozone supply means of Cote'593 as the applicant argues. It is provided to show that "ozone" is mostly air, having some level of ozone in it. It is well known that ozone is an unstable gas and can exist only in small concentrations in air or oxygen. Mere argument by the applicant that Cote'593 ref refers to ozone as simply ozone, and not air [containing ozone] is not adequate, applicant must show

evidentiary support. Re the argument that the air compressor in Cote'593 ref "... is not connected in any way to any means for recovering residual ozone", see figures 7 and 8 wherein the air compressor 19 is connected to the ozone recycle loop 21.

Argument against inherent recycle of carbon dioxide: Applicants argue that there is no apparatus shown in Cote'593 that would recycle the gas inherently. In response, applicants obtain carbon dioxide from the system – as air bubbles through the water being treated. Cote'593 teaches bubbling air and ozone through water being treated. If applicants can obtain carbon dioxide in excess of what is present in this process, so can Cote'593 - inherency. Rest of the arguments in this paragraph of applicants' response are beyond the scope of the claims.

In response to applicants' arguments re the 103 rejection that the office action does not provide a prima facie case to why a person skilled in the art would find obvious to combine Cote'593 with Dickerson'254: the motivation to combine is clearly stated in the rejection. Re the argument "the improved pH control and other advantages cited in the office action could be achieved by other means that would not result in the claimed invention" [underline added] is not a sound argument to overcome the rejection. Rest of the arguments in this paragraph of applicants' response are speculative without evidence, and goes beyond the scope of the claims. Please note that even if the teaching Cote'593 is for primarily ozone gas, ozone is a gas, it contains air (even though ozone can be in oxygen, the system has plenty of air because Cote injects air in to the water

and also shows air compressor connected in loop with the ozone circulation loop in the figures 7 and 8), it inherently generates carbon dioxide from the water by oxidation of the bio materials in the water.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krishnan S Menon whose telephone number is 571-272-1143. The examiner can normally be reached on 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L Walker can be reached on 571-272-1151. The

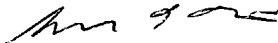


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fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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